

ABSTRACT OF THE DISCLOSURE

A Hebbian synapse emulation circuit models the conductance of a synapse circuit. In one embodiment, the circuit includes a counter that provides control signals determining the conduction states of electrical pathways, which define the conductance level of the synapse.

- 5 The counter can increment, decrement, or leave the same, the synapse conductance value based upon potentiation and depression signals that are derived from a voltage that corresponds to the calcium concentration in the synapse. The counter can be coupled to a plurality of synapse circuits on a time-shared basis.

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